of the other two axes; or, what is the same thing, to the plane through the centres of the Earth, Sun, and Moon.

The co-ordinates of the vertex of the cone are therefore $X_\circ$, $Y_\circ$, $Z_\circ$, where these denote what the foregoing values of X, Y, Z, become on substituting therein for x, y, z, the values

$$\frac{k'a \mp ka'}{k' \mp k}, \qquad \frac{k'b \mp kb'}{k' \mp k}, \qquad \frac{k'c \mp kc'}{k' \mp k},$$

and the equation of the cone therefore is

$$(X - X_\circ)^2 + (Y - Y_\circ)^2 = \tan^2 \lambda\, (Z - Z_\circ)^2,$$

where

$$\sin \lambda = \frac{k' \mp k}{G}$$

if for a moment G denotes the distance between the centres of the Sun and Moon. We have therefore

$$\tan \lambda = \frac{k' \mp k}{\sqrt{G^2 - (k' \mp k)^2}},$$

or since

$$G^2 = (a' - a)^2 + (b' - b)^2 + (c' - c)^2,$$

this is in fact

$$\tan \lambda = \frac{k' \mp k}{\sqrt{\varrho + \varrho' - 2\sigma}},$$

where ϱ, ϱ', σ signify as before; and thus $X_\circ$, $Y_\circ$, $Z_\circ$, $\tan \lambda$ are all of them given functions of a, b, c, k, a', b', c', k', and consequently of the before-mentioned astronomical data of the problem. The form is substantially the same as Bessel's equation (3), *Ast. Nach.* No. 321 (1837), (but the direction of the axes of X, Y, is not identical with those of his x, y); and it is therefore unnecessary to consider here the application of it to the calculation of the eclipse for a given point on the Earth.

The Astronomische Gesellschaft.

The third biennial meeting was held at Vienna from the 13th to the 16th of September, 1869, under the presidency of M. Struve; the number of members present was 39; total number 216. The several subjects in question at the meeting of 1867 (*See Monthly Notices*, vol. xxviii. p. 268) were further discussed, and other subjects brought before the meeting; the principal ones were as follows:—

1. As to the New Tables of *Jupiter*, a large part of the

auxiliary calculations had been performed under the direction of Prof. Hansen, by junior members of the Society; and (his own part of the work being already accomplished) it was hoped that in the following year the definitive amendment of the elements could be taken in hand.

2. The reduction of the observations of the Periodic Comets had been proceeded with; a desideratum in reference thereto had been supplied by the completion of the *Tabulæ Quantitatum Besselianarum pro Annis* 1750 *ad* 1840, under the direction of MM. Struve and Auwers.

3. In reference to the new reduction of Bradley's observations, Prof. Auwers reported that the more mechanical part of the work was already accomplished. The number of zenith distances observed between 1750 and 1762 (exclusively of those of the Moon and planets, which were not in the first instance to be included in the new reduction) was about 19,000, of which 1650 related to fundamental stars.

4. Dr. Schmidt, Director of the Observatory at Athens, exhibited eight sheets of his new map of the Moon; the plan being that of Lohrman's, but the scale about double, the diameter being 6 Paris feet. It was stated that the publication of the map would hardly be completed within 10 years.

5. Plans were exhibited of the proposed New Observatory at Vienna.

6. In reference to the plan for the observation of the stars of the northern hemisphere up to the ninth magnitude, reports were received from MM. Struve, Kowalski, Krüger, Schwarz, Bruhns, Tiele, Auwers, and Safford, upon the progress which had been made: and a definitive programme was drawn up, which is published in the *Vierteljahrschrift*. It appears thereby that the work has been undertaken by the different observatories in zones as follows:—

80°	to	75°	Kasan.
75	,,	70	Dorpat.
70	,,	65	Christiania.
65	,,	55	Helsingfors.
55	,,	50	*Vacant.*
50	,,	40	Bonn.
40	,,	35	Chicago.
35°	,,	30°	Leipzig.
30	,,	25	Cambridge E.
25	,,	15	Berlin.
15	,,	10	Leipzig.
10	,,	4	Mannheim.
4	,,	1	Neuchatel.
+ 1	,,	− 2	Palermo.

7. Prof. Förster presented a report on the Eclipse-expedition

of 1868, which was intended to be published as a supplement to the *Vierteljahrschrift.*

8. Some discussion took place as to the proposed expedition for the observation of the transit of 1874.

The next meeting was fixed to be at Stuttgard, in 1871, under the presidency of M. Struve.

Besides the *Vierteljahrschrift* and the several works referred to *Monthly Notices*, vol. xxviii., there have been published by the Society.

Supplement-heft zu Jahrgang III.. von Asten Dr. E. *Neue Hulfstafeln zur Reduction der in der Histoire Céleste Française enthaltenen Beobachtungen*, 1868.

9. Lesser Dr. Otto. *Tafeln der Pomona mit Berücksichtigung der Störungen durch Jupiter, Saturn und Mars berechnet*, 1869.

Instrument for Sale.

A large spectroscope, recently constructed by Messrs. Simms for Mr. Huggins. The prisms are by Hofmann. It is adapted for use with the telescope, and suitable for observation of nebulæ, stars, and the Sun. It can be used for table purposes. To be seen at Mr. Ladd's, Beak Street, Regent Street, W.

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